

Executive Summary

Banta-Carbona Irrigation District
Positive Barrier Fish Screen

Applicant: Banta-Carbona Irrigation District
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Tracy, California 95378-0299

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DWR MARIPOSA

Banta-Carbona Irrigation District holds water rights dating back to the early 1900s for the diversion of 204 cfs from the San Joaquin river at Mile 63.5. With the exception of a five-year period between 1971 and 1976, the diversion canal has had no fish screens. The primary source of water delivered to the District's users comes from the San Joaquin River. This water is delivered to the system from Pumping Plant No. 1, located at the end of a 6,000-foot river diversion canal. The District supplements San Joaquin River water with water diverted from the Delta-Mendota Canal. Due to system restrictions, this secondary source is available only to upper parts of the distribution system.

The proposed project will be a vertical Vee-screen at the entrance to BCID's intake channel at its confluence with the lower San Joaquin River. The project was selected from five potential alternatives in a \$46,000 feasibility study conducted by Montgomery Watson of Sacramento.

The anticipated benefits will be to the anadromous fishery, primarily the remnant spring run Chinook salmon, but will also protect other anadromous and fresh water species endemic to the Sacramento-San Joaquin Rivers Delta. A fish screen on the Intake Channel will protect runs to three major San Joaquin River watersheds: the Stanislaus, Tuolumne and Merced Rivers. Screening the next large diverter will protect runs only to the Merced River. The Central valley, including the San Joaquin River, supports several species of anadromous fish including: chinook salmon, steelhead trout, American shad, sturgeon, and striped bass. Through consultation with the Department of Fish and Game and U.S. Fish and Wildlife Service, chinook salmon have been accepted as the target species for establishing screening criteria for this project. Although Delta smelt have not been found above Mossdale (River mile 56), the diversion is located within the fringes of the designated critical habitat area. Additional discussion on the target species may be required prior to starting final design.

BCID started this project during 1995 arranging for funding of a feasibility study conducted by the engineering firm of Montgomery Watson. As a result of this study the District began seeking funding for this proposed fish screen, and to date has arranged for \$2,136,750 of the \$4,014,500 required, to design, construct, and maintain the facility. When the balance of \$1,877,750 as been obtained, the District will commence with the project. The following is a timeline of activities.

	1997	1997	1998	1998	1998	1998-1999
	3rd Qtr.	4th Qtr.	1st Qtr.	2nd Qtr.	3rd Qtr.	4th-4th Qtr.
1. Complete financing arrangements						
2. Complete 30% design						
3. Final Design						
4. Permitting/Environmental documents						
5. Bidding period						
6. Construction						

BCID believes that construction of a fish screen on its intake channel would be the initiation of an incremental process, by fishery and agricultural interests, to protect fish species beginning at the mouth of the San Joaquin River and working toward the tributary headwaters. And, because of its location, the most important place to begin the protection for, and increase of, the remnant spring Chinook salmon runs on the San Joaquin River watershed. This protection would be of immense value, particularly in drought years, as the District's diversion has the potential ability to divert a considerable amount of water relative to what would be in the river during a drought. Thus, the District feels that this proposal is consistent with CALFED goals and is deserving of funding by CALFED.

ITEM	Estimated Cost
	(1996 \$)
Fish Screen Structure	\$1,934,000.00
Bypass System	\$364,000.00
Fish Return Pipeline and River Outlet	\$339,000.00
Electrical and Control	\$264,000.00
Mobilization and Demobilization	\$162,300.00
General Conditions, Bonds, and Insurance	\$108,200.00
Subtotal Construction Cost	\$3,171,500.00
Engineering, Administration, Environmental Permitting	\$743,000.00
Maintenance Fund Account	\$100,000.00
Estimated Total Project Cost	\$4,014,500.00

This proposal requests funding for design, construction, and establishment of a maintenance fund for the fish screen facility. The amount of money requested is \$1,877,750, of which \$1,777,750 is for design and construction, and \$100,000 is for the establishment of a maintenance account. The maintenance account would be administered by Banta-Carbona Irrigation District (BCID) with the California Department of Fish and Game overseeing and approving expenditures from this account as per a cooperative agreement, currently being written, between BCID and the Department of Fish and Game. The purpose of this account is to insure that there is adequate funds available for major repairs in years to come, thus insuring that the fish screen remains in operation. BCID will make annual deposits into the account in order for the account to remain large enough to pay for necessary repairs. Regular annual operating and maintenance expenses will be paid for by the District as part of its own budget.

BCID is 76 years old and is in good financial condition. It is governed by five board of directors who are successful businessmen and take pride in overseeing an efficient district. BCID's General Manager, David Weisenberger, holds a college degree in management and has 10 years experience in management, as well as six years experience with this District. BCID's General Manager is the person responsible for coordinating the development of this project. In addition, the District has hired Montgomery Watson, a leader in fish screen engineering and design, to design and oversee construction of this project.

The District will be operating the fish screen, providing daily maintenance and monitoring of the facility. It will be responsible for monitoring the fish screen's operation and providing status reports to the Department of Fish and Game.

There is good support for this project as evidenced by the financial support provided by the various agencies. The Department of Fish and Game is providing a \$75,000 grant towards final design, the Metropolitan Water District (through CALFED) has designated \$100,000 towards design and construction, and the U.S. Bureau of Reclamation has conformed two grant agreements for a total of \$1,961,750. The District hopes that the CALFED committee will also recognize the importance of this project and complete the funding necessary to build this facility.

Banta-Carbona Irrigation District Positive Barrier Fish Screen

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**Public - Special District - Non-Profit
Tax I.D.: 94-1734809**

**Project Manager:
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**Participants:
U.S. Bureau of Reclamation
U.S. Fish and Wildlife Service
California Department of Fish and Game
CALFED and Metropolitan Water District - Category III Funds**

RFP Project Group Type: Construction

Project Description

Project Description and Approach:

This project would provide a positive barrier fish screen on the Banta-Carbona Irrigation District's (BCID) intake channel leading from the San Joaquin River at River Mile 63.5. Category III funds would be used for completing the financing necessary for gathering pre-construction data, completing the final design of the positive screen barrier, constructing and installing the screen, as well as establish an account from which major repairs on the fish screen would be paid. BCID has arranged for over half the funds necessary to finance this project through grants from the U.S. Bureau of Reclamation (USBR), California Department of Fish and Game (DFG), and CALFED Category III (from Metropolitan Water District contributions). BCID is working closely with the California Department of Fish and Game to develop a cooperative agreement under which to operate the proposed fish screen. This agreement is delineating who is responsible for operating, maintaining, and repairing the fish screen. Currently, the document is in the hands of our respective lawyers for drafting a legal document. BCID believes that most, if not all, of the previous issues of disagreement between it and DFG have been resolved or are close to resolution. These issues were: 1) ownership; 2) responsibility for paying for O&M; 3) responsibility for paying for ordinary major repairs and replacement; and 4) responsibility for repairing the structure in the event of a "natural disaster". BCID's understanding is that: 1) DFG will be the owner of this fish screen; 2) BCID will operate and pay for the operating and annual maintenance; 3) BCID will contribute to a "maintenance account", set up in its name, on an annual basis to provide a fund from which major repairs and replacements are paid; and, 4) in the event of a "natural disaster" that both the DFG and BCID will work cooperatively in arranging for repair of the facility. This document should be ready for execution by the end of September, 1997.

In 1995, the District obtained a \$45,000 grant from the Department of Interior to obtain a fish screening feasibility study. The final report, "Banta-Carbona Irrigation District, Final Report, Fish Screen Feasibility Study" was completed by Montgomery Watson, January 1996. Based upon the report findings, the recommended alternative is to design and construct a 14 panel vertical screen structure on the District's Intake Canal about two hundred feet downstream from its confluence with the San Joaquin River (see figure 4-9). Each panel would be nominally 6-feet high and 9-feet wide installed in a single vertical vee-configuration, 7 panels to a side (see figure 4-10).

The positive barrier fish screen will be fully consistent with the fish screen criteria of the regulatory agencies including the National Marine Fisheries Service, California Department of Fish and Game and the U. S. Fish and Wildlife Service.

When in operation, the fish screen will prevent entrainment of juvenile anadromous fish, specifically fall-run chinook salmon for as long as the next fifty years. The intake channel has been unscreened since commencement of pumping in 1925 excepting a six-year period between 1971 and 1976. The California Department of Fish and Game (F&G) installed and operated a screen those years between the months of February and June. It was not operated in other months. F&G ceased screen operation following the 1976 irrigation season.

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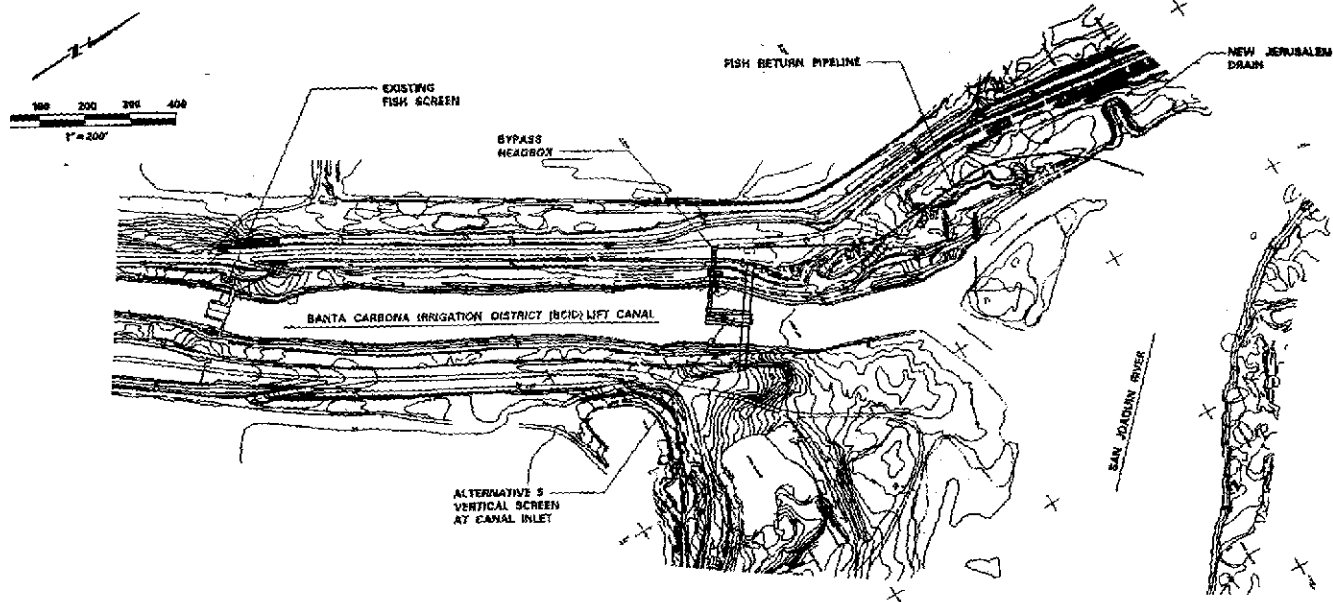


FIGURE 4-3
ALTERNATIVE 5
OVERALL PLAN

MONTGOMERY WATSON

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1-002237

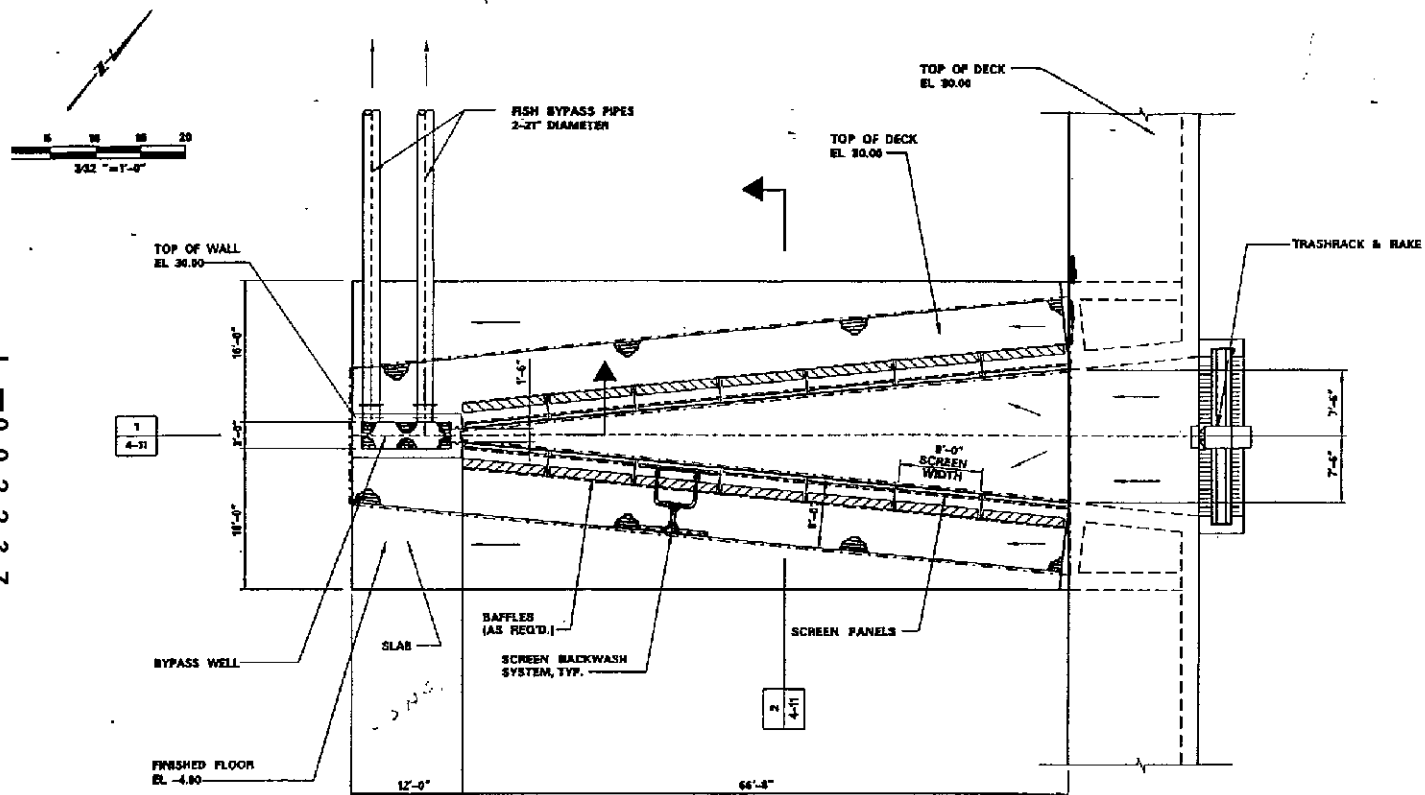


FIGURE 4-10
ALTERNATIVE 5
SCREEN - PLAN

F&G abandoned the screen, concluding they had selected the wrong site. It had been constructed at the end of a quarter mile-long settling basin and F&G personnel believe predator fish living in the basin desecrated the migrants in the slow-moving water before they could reach the screen and be trucked to the Sacramento-San Joaquin Rivers Delta. In fact, the settling basin is considered a striped bass haven by sport fishermen. The new facility will be located near the settling basin entrance.

It is the intention of the Banta-Carbona Irrigation District's Board of Directors to move the project forward with all due diligence. Design planning will be initiated with our contractor, Montgomery Watson as soon as full funding is assured. This could be as early as September 1997. Montgomery Watson will be managing this project from design through construction as well as training BCID staff on the operation and maintenance of the fish screen upon completion.

If able to proceed in October, 1997, Montgomery Watson staff could then have designs 30% completed and ready for review by the end of January, 1997. At 30% designed, BCID, the Department of Fish and Game (DFG), and U.S. Fish and Wildlife (USFW) will review the proposed design to see if it meets the appropriate criteria. After 30% design a working set of plans will be submitted to DFG for comment every two months (or when appropriate) until final designs are completed. Final design should be completed by June 1, 1997. Bidding followed by construction could start immediately and completion should not take more than one and 1/2 years (barring weather uncertainties) including testing and training of District staff to operate and perform minor maintenance activities. Given time for contingencies, this could put project completion at the end of 1999. The project will commence as soon as financing is assured.

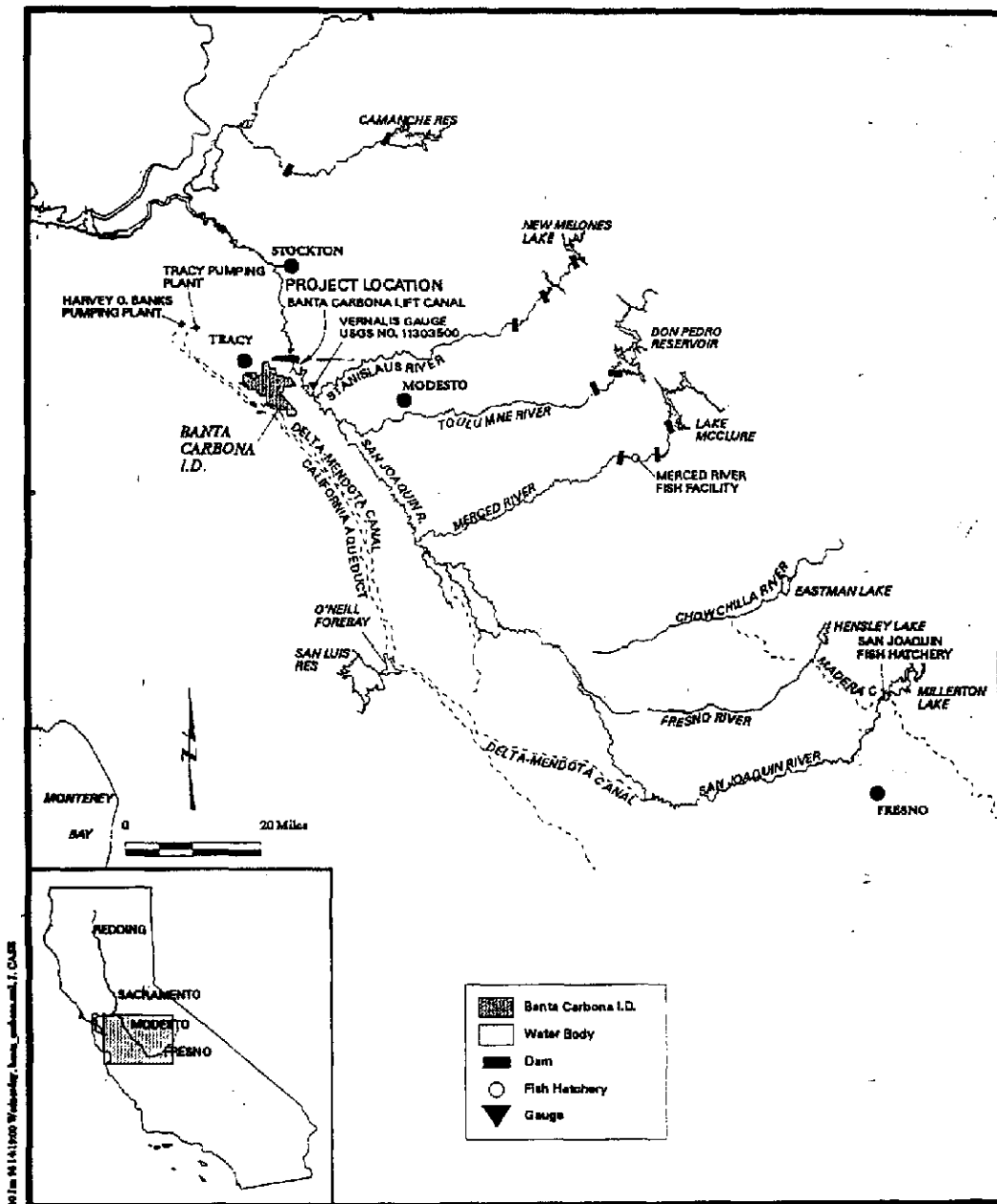
Our engineering contractor will commence with final designs as soon as they are directed to proceed. The structure will be built within the confines of a leveed channel and will require intake channel dewatering by damming the construction site. The irrigation season ends the first Friday of November each year and usually does not commence prior to mid-March the following year. Construction must occur during this time span.

There is the possibility of having an unusually wet year where it would be difficult to provide an upstream diversion dam of sufficient height to prevent work site flooding. Therefore, if a very wet winter should occur, construction would be delayed a year.

Location of Project:

BCID's intake channel is located on the San Joaquin River at River mile 63.5. This is below three San Joaquin River watersheds, the Stanislaus River, the Toulemne River, and the Merced River watersheds (see map, Figure 1-1).

The proposed fish screen site is about 8 miles east of Tracy, California, in San Joaquin County, in the NE 1/4 of Section 34, T2SR6E, MDB&M. It is accessible from Interstate 5 by taking the Kasson Road off-ramp southeast on Kasson Road for approximately three miles. A left turn from Kasson Road to either of the north or south 1 and 1/4 mile long maintenance roads adjacent to the Banta-Carbona Irrigation District Intake Channel brings the traveler to the site (see figure 2-1).



Banta Carbona Irrigation District Location Map
Figure 1-1

1-002240



**FIGURE 2-1
EXISTING
SITE PLAN**

Expected Benefits:

Chinook salmon is the primary target species the proposed fish facility will be designed to protect. Four distinct runs of chinook are present in California's Central Valley streams: fall, late-fall, winter and spring. While all four species were once found in the San Joaquin River, it now supports only a remnant fall-run which the California Department of Fish and Game manages as a genetically distinct stock. The remnant fall-run population numbers have varied widely from year to year depending on the timing and magnitude of river flows. At present, no significant chinook populations exist in the river.

Spawning areas for the fall-run are generally along the lower stream elevations of the San Joaquin River watershed where the District's canal intake is located. Smolt emigration is from January through June. In the last five years, the District has pumped water from the river during all of these critical emigration months although most years will find pumping starting sometime after the middle of March. Therefore, having a fish screen in operation during the fall-run outmigration is considered essential if the chinook salmon population is to be first stabilized then returned to its historical prominence.

Possible secondary benefits

Several other species besides chinook salmon could also benefit from screened diversions. These species are discussed individually below.

Steelhead (Rainbow Trout) -- The steelhead has a life cycle similar to chinook salmon. The San Joaquin River once supported steelhead runs, but they too have been reported reduced to remnant levels by water development facilities and general habitat degradation.

American Shad -- Atlantic coast shad were introduced during the early 1870's but are seldom found in Central Valley streams except during the annual spawning migration which peaks between February and June. Shad spawn over sands and gravels found in Central Valley streams including the lower San Joaquin River. Although this species was more common in the Sacramento River, the San Joaquin River once supported shad migrations and they were avidly sought by fishermen. Shad larvae are less than 1/2" long and generally move with the current to the Sacramento-San Joaquin Rivers Delta where they grow to maturity. They generally are transported to the Delta during the months of April thru early August.

Sturgeon -- Not as much is known about the habits of this anadromous fish and there are only estimates of the San Joaquin River sturgeon spawn. Those estimates indicate that up to 10% of the adult sturgeon use the lower San Joaquin River for their spawning habitat. Spawning occurs from mid-February thru late April. Hatching occurs from two to five days later. Nursery areas extend from the spawning areas to the Sacramento-San Joaquin Rivers Delta.

Striped Bass -- Like the American shad discussed above, striped bass is a late 1800's introduced species from the east coast. Subsequently, they have provided one of California's most valuable sport fisheries.

Spawning normally occurs between April and mid-June with the eggs hatching within two days of the spawn. The young drift with the current back to the Delta. Spawning habitat includes the mainstream San Joaquin River during years of very high flow runoff when the water is of especially high quality. During summer months, the striped bass migrate back to the Delta.

Other Species -- There are other non-anadromous fish species of interest that the proposed fish screen facility may affect positively, including the Sacramento splittail and Delta smelt. However, studies of these and other local non-anadromous species have not been undertaken and therefore screening benefits are unquantified.

Long-term Benefits -- When the Banta-Carbona Irrigation District and other lower San Joaquin River diverters have screened their intakes, it is anticipated the fall-run Chinook Salmon and other depleted fish species mentioned above would have their San Joaquin River populations increased to a point where they would no longer be considered threatened or endangered. While not quantified at this time, the return of these species to commercial abundance will provide significant sport, recreation and commercial fishing benefits to the local and state economies.

Screening the District's intake channel would also ease pressures to cease agricultural water pumping during the critical spawning months which also coincide with the peak agricultural water requirement month of May. When adequate water supplies have been assured, food and fiber producers in the Banta-Carbona Irrigation District can average annual gross crop sales of \$20,000,000±. This has a substantial impact on the local economy in particular and the state economy generally and is in itself worth protecting to provide economical foodstocks for California's burgeoning populace.

Short-term Benefits -- The most immediate short term benefit, particularly if other river intakes near the Banta-Carbona Irrigation District's are also screened within the same time period, would be to stabilize and prevent extermination of those anadromous fishery species populations discussed above that are only remnant populations today. A complete loss of these populations, especially chinook salmon, would be incalculable as to future monetary losses as well as environmental losses to society as a whole.

Food and fiber producers could return to growing high value crops such as vegetables instead of low risk crops as, for example, the grain and oil seed crops grown when water supply uncertainties cause every level of farm interests to reduce risks, including bankers, suppliers and farmers. A screened diversion would ease pressures to stop pumping during spawning migrations of both the adults and juveniles.

Potential Local Community Benefits of Proposed Action:

The Banta-Carbona Irrigation District (BCID) has long-standing (75 years) water right permits to divert 204 cubic feet per second from the San Joaquin River. There have been environmental pressures in the last few years to reopen water rights permits with the implication being that diversion quantities could eventually be reduced. This has brought uncertainty to District water users and their money lenders leading to some cutbacks in higher value and riskier crops because production loans were either cut back or curtailed entirely.

Food and fiber producers in the Banta-Carbona Irrigation District have averaged a gross crop production near \$1,500.00 per acre when water supplies are stable. With a fish screen, the certainty of future water supply availability during critical months would result in an immediate, favorable "ripple effect" of increased employment, manufacturers able to sell equipment, and seed, fertilizer, pesticide and other allied industries likewise able to increase sales. Taxes from the increased economy would benefit local governments, enabling them to provide a better living environment for their residents.

Not all the above benefits have been quantified thru studies, nevertheless, there are no known or foreseeable negatives in constructing the fish screen.

Proposed Scope of Work - Monitoring and Data Evaluation

The BCID General Manager shall provide written status reports to the Project Manager and the Grants and Cooperative Agreements Officer's Representative (GCAOR), both of whom were assigned by USBR, on a monthly basis documenting the project's progress and expenditures through project completion. In addition, CALFED will receive these documents to facilitate their monitoring of the project. Also, at critical milestones, in performance of the work, BCID shall conduct briefings for the USFWS, USBR, DFG, CALFED, and involved regulatory agencies. The purpose of the briefings will be to insure that all regulatory and procedural policies, and biological, engineering, and cost factors associated with the project are understood by the participants and are addressed in the final designs and specifications. Briefings will be performed when:

- (1) Alternative concepts are being formulated;
- (2) the designs are approximately 30-35% completed;
- (3) the designs are approximately 90% completed.

In addition, the final draft design and specification package shall be submitted to the Project Manager and the GCAOR. They will review and comment on the design and on any regulatory agency considerations. After approval of final design, all information relative to bid opening and award will be provided to the Project Manager.

The BCID General Manager will provide originals of all reports to the Project Manager, and GCAOR. These reports shall include, but are not limited to, feasibility and cost analyses, construction schedules, engineering reports detailing project alternatives, environmental documents such as initial environmental studies/environmental assessments and environmental impact reports/studies, final designs and specifications detailing the work performed and the total cost of the project, and the as-built drawings and final construction report, and any other hydraulic or biological monitoring plans or reports that may be required by involved agencies for assuring that fish resources are being protected from entrainment during water diversions.

Below is a chart outlining the phases and the approximate periods of activity and completion.

	1997	1997	1998	1998	1998	1998-1999
	3rd Qtr.	4th Qtr.	1st Qtr.	2nd Qtr.	3rd Qtr.	4th-4th Qtr.
1. Complete financing arrangements						
2. Survey and geotechnical						
3. Complete 30% design						
4. Final Design						
5. Permitting/Environmental documents						
6. Bidding period						
7. Construction						

Implementability

Permitting and environmental documents have not been attained as they are a part of the proposed action in this proposal. The land on which the fish screen will be located is owned by BCID, as are the access roads. There is no known local opposition to this proposed facility, or for that fact, any opposition. The only known factors which would effect the construction of this facility would be weather and flood type flows on the San Joaquin River. Excessive rain during the proposed construction time period could delay construction as could flood flows on the river.

Costs and Schedule To Implement Project

Budget Costs

The table below outlines the funds necessary for the construction of the fish screen. There is further detail on the next page on a table called "Fish Screen Design and Construction Management Estimate".

	(1996 \$)
Fish Screen Structure	\$1,934,000.00
Bypass System	\$364,000.00
Fish Return Pipeline and River Outlet	\$339,000.00
Electrical and Control	\$264,000.00
Mobilization and Demobilization	\$162,300.00
General Conditions, Bonds, and Insurance	\$108,200.00
Subtotal Construction Cost	\$3,171,500.00
Engineering, Administration, Environmental Permitting	\$743,000.00
Total design and Construction Cos	\$3,914,500.00
Maintenance Fund Account	\$100,000.00
Estimated Total Project Cost	\$4,014,500.00

BCID sources of all funds for design and construction are detailed in the following table.

Banta-Carbona Irrigation District			
Fishscreen - Alternative 5 - Vertical Screen at Canal Inlet			
	State	Federal	
Source of Fishscreen Funds	Amount	Amount	TOTAL
CVPIA Funds-Grant-Feasibility Study		\$45,000.00	\$45,000.00
Proposition 70 Grant Money - For Final Design	\$75,000.00		\$75,000.00
CAT III Grant - For Final Design	\$100,000.00		\$100,000.00
U.S. Bureau of Reclamation - Grant		\$1,916,750.00	\$1,916,750.00
Apply for Proposition 204 Funds - CAT III	\$1,877,750.00		\$1,877,750.00
TOTAL	\$2,052,750.00	\$1,961,750.00	\$4,014,500.00

1) The \$1,961,750 from the USBR is an executed agreement and the funds are available to be spent. BCID has used \$45,000 of that money for the feasibility study.

2) BCID has signed the agreement with DFG for the \$75,000, but is waiting for the counter signature from DFG.

3) The Cat III money of \$100,000 from Metropolitan Water District is yet to be consumed. BCID's lawyer is currently preparing a contract to be executed by BCID and MWD.

4) Of the \$1,877,750 applied for in this proposal, \$1,777,750 is necessary for the design and construction of the fish screen.

5) \$100,000 of the \$1,877,750 is for the establishment of a "maintenance account" from which major repairs and replacements would be paid for in the future. This account could be set up upon completion of the fish screen and a condition thereof.

BCID would need the proposed funding of \$1,777,750 for design and construction available at the time of an executed agreement between CALFED and BCID. The reason being is

that BCID is required by its USBR funding agreement to equally distribute its expenses among all funding sources so that the federal share doesn't exceed 50% of the project costs throughout the term of the project agreement. Also, BCID proposes to draw on funds from CALFED in the same manner as required by USBR and that is by being reimbursed for accomplished work based upon bills and documentation in sufficient detail as to permit review and analysis of costs incurred by BCID. Cost items shall include, but not be limited to category and hours of labor expended, material and supply costs, other direct and indirect costs. The documentation shall also include a breakdown of the costs assigned to or incurred by each cost share participant during the invoice period.

The schedule of events would be as follows.

	1997	1997	1998	1998	1998	1998-1999
	3rd Qtr.	4th Qtr.	1st Qtr.	2nd Qtr.	3rd Qtr.	4th-4th Qtr.
1. Complete financing arrangements						
2. Survey and geotechnical						
3. Complete 30% design						
4. Final Design						
5. Permitting/Environmental documents						
6. Bidding period						
7. Construction						

Upon completion of construction BCID would need the balance of the requested funds, the \$100,000, to establish the "maintenance account". BCID will contribute \$5,500 per year, adjusted annually by the consumer price index (CPI) not to exceed 3% per year, to the account. The fund, even though in BCID's name, would be administered jointly by DFG and BCID to pay for major repairs and replacements on the fish screen as per their cooperative agreement. It has been estimated that with the original amount deposited and BCID's deposits annually that the account will amortize adequately to pay for those future repairs. (See amortization table on next page.)

Below is an estimated O&M annual cost which BCID will be responsible for as per the cooperative agreement with DFG. BCID will be providing the labor and funds for these annual expenses.

O&M Estimated Annual Cost				
Item	Unit	Labor Rate	Quantity	Annual Cost
O&M Labor				
Routine Inspection	Hr	\$30.00	318	\$9,540.00
Monthly Maintenance	Hr	\$30.00	224	\$6,720.00
Annual Facility Maintenance	Hr	\$30.00	80	\$2,400.00
Subtotal Labor				\$18,660.00
O&M Materials and Equipment				
Routine Inspection	Yr		1	\$0.00
Monthly Maintenance	Yr		1	\$700.00
Annual Facility Maintenance	Yr		1	\$25,000.00
Subtotal Materials and Equipment				\$25,700.00
Power Usage				
Pumping	hr/Yr	\$/MHW		
	MWH/YR	\$30.00	624	\$18,720.00
Miscellaneous Site	MWH/YR	\$30.00	102	\$3,060.00
Subtotal Power				\$21,780.00
Total Annual Cost				\$66,140.00

Amortization - Banta-Carbona Irrigation District Cost - Life of Facility													
Item	Life	Cap Cost	Total	5	10	15	20	25	30	35	40	45	50
Headworks Structure			Cap Cost										
Trashrack and Support	50	\$87,768	\$87,768										\$384,766
Trash Rake Structure	20	\$85,000	\$340,000				\$153,519				\$277,270		
Fish Screen Structure													
Baffles	50	\$48,195	\$48,195										\$211,282
Screen Cleaner	50	\$80,000	\$80,000										\$350,712
Screen Hoist	50	\$30,000	\$30,000										\$131,517
Bypass System/Return Line													
Trash Scrns-Clean. Pumps	25	\$10,000	\$30,000					\$20,938					\$43,839
Collection pipes to pumps	25	\$30,000	\$90,000					\$62,814					\$131,517
Fish Pump/Motors (3)	25	\$20,000	\$60,000					\$41,876					\$87,678
Backwash Pump/Motors (3)	25	\$10,000	\$30,000					\$20,938					\$43,839
TOTAL			\$796,000				\$153,519	\$146,566			\$277,270		\$1,385,150
First Year Investment			\$100,000	\$154,395	\$236,218	\$346,886	\$495,362	\$497,309	\$518,387	\$743,616	\$1,044,132	\$1,088,942	\$1,517,562
Annual Outlay (b)			\$5,500	\$6,376	\$7,392	\$8,569	\$9,934	\$11,516	\$13,350	\$15,476	\$17,941	\$20,799	\$24,111
Bank Account (a)			\$100,000	\$160,771	\$243,610	\$355,455	\$351,777	\$362,259	\$531,737	\$759,092	\$784,803	\$1,109,741	\$156,523
(a) Assumes 5% interest													
(b) 3% inflation													

Applicant Qualifications

There are a diverse group of people involved with this project because of the number of entities participating in it. This will allow for all aspects of the project to be monitored in an all encompassing way, protecting the public's interests as well as developing a quality product. Because there are representatives from the State and Federal Agencies involved as project managers, there will be a wealth of knowledge to draw upon to provide BCID with a state of the art fish screen. Also, BCID's engineering consultant firm of Montgomery Watson has a considerable amount of experience with the development of fish screens on the west coast.

Below is a list of those people and the entity they are associated with that will be participating in this project.

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William Loudermilk
Contact Person on Cooperative Agreement
Calif. Department Of Fish and Game
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Clarence Mayotte
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Montgomery Watson
777 Campus Commons Road
Sacramento, CA 95825
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Standard Terms and Conditions

Please find attached those documents required to be submitted with this proposal.

QUALIFICATIONS AND RELATED EXPERIENCE

The Montgomery Watson team is thoroughly qualified for all aspects of the project. We have successfully designed and built fish screens, fish ladders, and diversion systems in California and throughout the western United States. The following series of projects, arranged by consultant or subconsultant, present specific examples of completed projects that substantiate our qualifications to design and build the fish passage structures, and to effectively integrate the screen and ladder with the diversion system. These example projects are selected from many similar projects. In the interests of keeping the proposal brief we did not list all possible relevant experience. Should there be any questions about our experience and expertise for the

Project we will be happy to provide additional examples and references.

Future operations may require the use of all seven bays to further limit approach velocities to 0.2 fps.

The screens are cleaned by a pair of mechanical devices that clean the screens using a hydraulic rake mechanism that sweeps debris up and off the screen face in sequential stations along the length of the facility. The cleaning interval is approximately 20 minutes. Debris hauled from the river is deposited on a deck, then swept by a transporter mechanism into a debris bin located below the structure deck. The debris is hauled away periodically.

The complex tidal environment in this location required exceptions to some agency criteria which were successfully negotiated with the fisheries agencies.

Montgomery Watson Projects

Contra Costa Water District - Los Vaqueros Project

Client Reference: Gary Darling,
Contra Costa Water District
Telephone: 510.674.8000

Key Personnel: Phil Sharpe, Mike Matson, Larry Johnson, Dennis Dorratcague

As part of Contra Costa Water District's Los Vaqueros Project, Montgomery Watson designed the Old River Facility fish screens and intake pumping plant.

The fish screening facility is designed to meet the criteria of the National Marine Fisheries Service (NMFS) and the California Department of Fish and Game (CDFG) for protection of migrating juvenile Chinook Salmon. The facility consists of several screened intake bays inclined 10 degrees from vertical and constructed as a part of a larger concrete pump intake structure. Fish screen panels are constructed with openings of no more than 3/32-inch. The initial operation of the facility will use five bays to limit approach velocity to 0.33 fps.

Ducks Unlimited - M&T/Parrot Pump Station and Fish Screens

Client Reference: Les Heringer, Jr.,
M&T Chico Ranch
Telephone: 916.342.2954

Key Personnel: Neil Mann, Neil Schild, Dennis Dorratcague



Sheet pilings in place ready to begin dewatering for constructing the M&T screens.

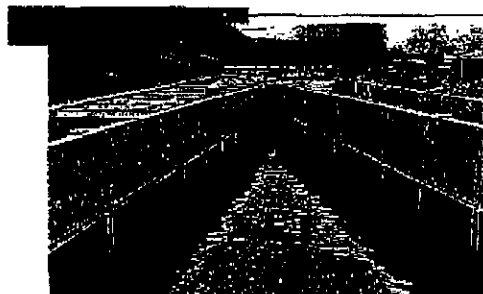
Montgomery Watson designed and provided construction management services for a new pumping plant and

fish screen on the Sacramento River and water supply pipeline to serve agricultural and refuge lands. The screens are cleaned with bursts of high pressure water. Montgomery Watson also managed the preparation of environmental documentation for the project. Montgomery Watson coordinated with the environmental review team and worked closely with representatives from the U.S. Fish and Wildlife Service, Department of Fish and Game, National Marine Fisheries Service, State Reclamation Board, U.S. Army Corps of Engineers, and State Reclamation Board to design the fish protection facilities, protect water quality in the river during construction, and to maintain the integrity of existing Sacramento River levees. The project design, environmental review, and permitting activities were completed within a five month period when juvenile chinook salmon were not present near the construction area. This project was completed with funding from the U.S. Fish and Wildlife Service, California Department of Fish and Game, Category III, California Wildlife Conservation Board, and Ducks Unlimited.

Puget Sound Power and Light Company - White River Fish Screen

Client Reference: Wayne Porter,
Puget Sound Power and Light Company
Telephone: 206.462.3073

Key Personnel: Dennis Dorratagac, Robert Morrow



Typical vee-shaped fish screen designed by Dennis Dorratagac and built by Montgomery Watson.

The White River Hydroelectric Project diverts up to 2,000 cfs from the White River in western Washington, into an off-river canal for power generation. New fish

screens were constructed to replace existing drum screens constructed in 1938. Montgomery Watson prepared a fish screen project report, designed the screen, and provided construction management support. During the study, Montgomery Watson developed a HEC-2 model of the final canal design, performed a siting study, prepared a sedimentation study, and developed a construction schedule.

The project included new vertical plate "vee" screens, an operations and maintenance building, an outlet tower for an existing sedimentation basin, a fish recovery pond and trap, and a 30-inch diameter bypass pipeline extending 2,200 feet from the screen to the White River. The screen structure was 245 feet long, 70 feet wide, and 28 feet high and constructed of concrete with wedgewire screen primary screen panels arranged in 26 bays each 18 feet high by 12 feet wide. The primary screens were arranged in a "vee" tapering from 62 feet at the upstream end to 3 feet at the apex of the vee. Secondary screens were located downstream from the primary screens to fine tune the bypass flows to 20 cfs. The fish screen structure was designed to minimize sediment deposition and it is cleaned by a combination of brushes and high pressure water bursts.

Walterville Fish Screen Facility

Client Reference: Jon Wollander
Eugene Water and Electric Board, Eugene Oregon
503.484-2411

Weyerhaeuser Fish Screens, McKenzie River

Client Reference: Mark Rauch
Weyerhaeuser Paper Company, Springfield, Oregon
541.741-5838

Clallam - Cline Intake and Fish Screens

Client Reference: Linda Newberry
Jamestown S'Klallam Tribe, Sequim Washington
360.683-1109

Olmsted Intake and Screening Structure

Client Reference: Sheldon Talbot
Central Utah Water Conservancy District, Orem Utah
801.226.7100

NONDISCRIMINATION COMPLIANCE STATEMENT

COMPANY NAME

BANTA-CARBONA IRRIGATION DISTRICT

The company named above (hereinafter referred to as "prospective contractor") hereby certifies, unless specifically exempted, compliance with Government Code Section 12990 (a-f) and California Code of Regulations, Title 2, Division 4, Chapter 5 in matters relating to reporting requirements and the development, implementation and maintenance of a Nondiscrimination Program. Prospective contractor agrees not to unlawfully discriminate, harass or allow harassment against any employee or applicant for employment because of sex, race, color, ancestry, religious creed, national origin, disability (including HIV and AIDS), medical condition (cancer), age, marital status, denial of family and medical care leave and denial of pregnancy disability leave.

CERTIFICATION

I, the official named below, hereby swear that I am duly authorized to legally bind the prospective contractor to the above described certification. I am fully aware that this certification, executed on the date and in the county below, is made under penalty of perjury under the laws of the State of California.

OFFICIAL'S NAME

James McLeod

DATE EXECUTED

07/28/97

EXECUTED IN THE COUNTY OF

San Joaquin

PROSPECTIVE CONTRACTOR'S SIGNATURE

PROSPECTIVE CONTRACTOR'S TITLE

President of the Board of Directors

PROSPECTIVE CONTRACTOR'S LEGAL BUSINESS NAME

Banta-Carbona Irrigation District

Item 11

Agreement No. _____

Exhibit _____

**NONCOLLUSION AFFIDAVIT TO BE EXECUTED BY
BIDDER AND SUBMITTED WITH BID FOR PUBLIC WORKS**

STATE OF CALIFORNIA

COUNTY OF San Joaquin

James McLeod

(name)

being first duly sworn, deposes and

says that he or she is President of the Board of Directors of

(position title)

Banta-Carbona Irrigation District

(the bidder)

the party making the foregoing bid that the bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the bid is genuine and not collusive or sham; that the bidder has not directly or indirectly induced or solicited any other bidder to put in a false sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that the bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder, or to secure any advantage against the public body awarding the contract of anyone interested in the proposed contract; that all statements contained in the bid are true; and, further, that the bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

DATED: July 28, 1997 By James McLeod

(person signing for bidder)



(Notarial Seal)

Subscribed and sworn to before me on 7/28/97

Edward J. Wmzinger

(Notary Public)